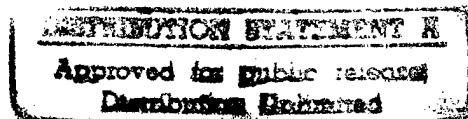




PROTECTING INSTREAM FLOWS IN IOWA: AN ADMINISTRATIVE CASE STUDY



COOPERATIVE
INSTREAM FLOW
SERVICE GROUP

INSTREAM
FLOW
INFORMATION
PAPER: NO. 20

FWS/OBS-83/18
August 1983



Cooperating Agencies:

Fish and Wildlife Service
Environmental Protection Agency
Soil Conservation Service

19970318 110

FWS/OBS-83/18
August 1983

PROTECTING INSTREAM FLOWS IN IOWA:
AN ADMINISTRATIVE CASE STUDY
Instream Flow Information Paper 20

by

Stewart W. Olive
Cooperative Instream Flow Service Group
Western Energy and Land Use Team
U.S. Fish and Wildlife Service
Drake Creekside Building One
2627 Redwing Road
Fort Collins, CO 80526

Western Energy and Land Use Team
Division of Biological Services
Research and Development
Fish and Wildlife Service
U.S. Department of the Interior
Washington, DC 20240

This report should be cited as:

Olive, S. W. 1983. Protecting instream flows in Iowa: An administrative case study. Instream Flow Information Paper 20. U.S. Dept. Int., Fish Wildl. Serv. FWS/OBS-83/18. 35 pp.

PREFACE

This paper is the fourth in a series depicting how particular States have protected instream uses of water. The purpose of the series is to detail historically the four routes through which States have established instream flow protection systems. The four routes taken by the States are: the reservation of water for instream flows; the incorporation of instream flow standards into regional water quality plans; the appropriation of water for instream flows; and the administrative protection of instream flows through the exercise of State government authority in issuing, refusing, and conditioning water use permits. The first paper illustrates how Montana established and implemented a system reserving unappropriated water for fish, wildlife, and public health purposes (Sweetman 1980). The second paper discusses California's attempts to protect instream uses of water through regional water quality plans (Olive 1981). The third paper describes Idaho's system, which protects instream uses of water by appropriating flows for certain segments of rivers and streams. This paper outlines Iowa's exercise of State government administrative authority to protect instream flows through the granting, refusing, and conditioning of water use permits. The intended audience for these papers includes individuals concerned with State water plans and State water administration, government agency personnel involved in fish and wildlife resources or water management, and the general public. These papers provide a look at the basic institutional processes in the management of instream uses of water.

This paper discusses the basic water law system in Iowa, which is important because any attempt to establish a system of instream flow protection must work within the framework of the law. This paper also provides an analysis of Iowa's governmental decisions about water allocation. The emphasis, however, is on Iowa's stream flow protection program.

CONTENTS

	<u>Page</u>
PREFACE.....	iii
INTRODUCTION.....	1
Iowa Water Users.....	1
Iowa Water Resources.....	2
Summary.....	3
IOWA WATER LAW.....	4
Natural Flow Rule and Reasonable Use Rule.....	4
Beginning of Permit System.....	5
Iowa's Permit System.....	6
Obtaining a Permit.....	9
Modification and Cancellation of a Permit.....	10
Summary.....	10
THE INSTREAM FLOW QUESTION.....	11
Establishing the Minimum Flows.....	11
Management of Established Minimum Flows.....	12
Role of Other Agencies.....	13
Other Programs for Protecting Instream Flows.....	14
Summary.....	18
INSTREAM FLOW DECISIONMAKING IN IOWA.....	19
Policy Thrusts.....	19
Interest Groups.....	21
Government Agencies.....	23
Review of Strategy Setting.....	28
CONCLUSION.....	30
REFERENCES.....	33

INTRODUCTION

This is the fourth in a series of papers that detail methods which States have used to protect instream flows. The first paper documented Montana's establishment of a system of reserving water for public health, fish and wildlife, and recreational purposes. The second paper detailed the process of implementing a system of instream flow protection through basinwide water quality plans that is occurring in California. The third paper discussed Idaho's approach of appropriating water for instream purposes. This paper discusses Iowa's efforts to protect instream uses through administrative methods; i.e., the exercise of State government authority in issuing, refusing, and conditioning water use permits. The intended audience for these papers includes individuals concerned with State water plans, State water administration agency personnel, Federal fish and wildlife biologists, water management personnel, and the general public. These papers provide a look at the basic institutional processes in the management of instream uses of water.

IOWA WATER USERS

Iowa is known for its agricultural production. The State contains 26,000,000 acres of Grade-1 soils, out of a total of 36,019,000 arable acres. This represents approximately 25% of all Grade-1 soils in the United States. The State's climate is classified as the "humid continental long summer" type. Iowa has a long growing season, with the majority of the moisture falling during the growing season (Sage 1974). The average moisture varies from 25 inches per year in the northwest to 35 inches in the southeast.

The combination of excellent soils, adequate moisture, and long growing season has enabled Iowa to become one of the agricultural production leaders in the United States. In 1978, Iowa ranked first in corn and hog production and second in soybean and cattle production (Dougal and Austin 1980). Agriculture has provided a stable base upon which the State's economy has been built. Iowa has also developed an industrial base and energy production facilities and expanded municipalities.

Although it appears on the surface that Iowa has abundant water resources, the increasing demand for water by various users will result in more competition for the available water. It has been estimated that the withdrawal rate of water in Iowa, from both surface and groundwater sources, will increase from 3,677 million gallons per day (mgd) in 1975 to 27,532 mgd in 2020 (Dougal and Austin 1980). The major increases in usage are projected to come from agricultural, energy production, and industrial categories. Agricultural withdrawals, primarily for irrigation, are expected to quadruple by the year 2000. Water withdrawals related to electric power generation are estimated to

triple by the year 2020, with an increase in consumptive use by a factor of 7.5 times. The use of water for the cooling of electric power generators results in more water withdrawals than any other category of water use in the State. A 300% growth in industrial withdrawals of water is projected by the year 2020, with a total consumptive rate increase of 19% (Dougal and Austin 1980:26-27; Iowa Natural Resources Council 1981:16-17).

IOWA WATER RESOURCES

Iowa is referred to as the State in between two rivers, the Mississippi and the Missouri. Sixty-nine percent of the land in Iowa drains into the Mississippi River; the remainder drains into the Missouri River. These two large rivers provide for transportation and are a source of water for domestic and agricultural needs and the cooling of electric power generating plants. They also support many species of fish and wildlife. Iowa contains six river basins: the western Iowa River basin; the southern Iowa River basin; the Des Moines River basin; the Skunk River basin; the Iowa-Cedar River basin; and the northeast Iowa River basin.

A casual look at the average annual stream runoff and groundwater availability could lead to the belief that Iowa is a water rich State. However, rivers in Iowa reach low levels during the summer-fall-winter period, when they are "insufficient to handle any major consumptive use" (Iowa Natural Resources Council 1981:14).

Iowa is underlaid by large groundwater aquifers. There are problems associated with the depth, quality, and location of the aquifers. Some of the major aquifers are slow to recharge, thus limiting the amount and rate of water that can be withdrawn without depleting the aquifer.

Shortages of both surface water and good quality groundwater occur in the northwest, southwest, and southcentral portions of the State, even during nondrought times (Iowa Natural Resources Council 1981:15). Major actions, such as additional water storage, diversion of border rivers, or desalinization of deep aquifers, would be needed to support any substantial increases in water use in these areas. While other areas of the State have greater water supplies, they do not have the capability to support "massive" withdrawals or consumptive uses.

Instream uses compete with out-of-stream uses for Iowa's water resources. Instream uses include fish and wildlife, recreation, waste load assimilation, and downstream requirements. Because of the richness of the soil in Iowa, most of the natural woodlands, pothole marshes, and prairie have been converted into farmland. Only 25% of the State's original 6.5 million acres of woodlands remain, and the loss of woodlands is continuing (Iowa Conservation Commission 1981:1-2). Only 5% of the pothole marshes remain in an undisturbed condition. The largest reduction has come in native prairie lands, where only 3,000 of the original 28 million acres remain in a natural state.

SUMMARY

Iowa is facing the type of competition for water resources from a variety of water users that has been a fact of life in the States west of the 100th meridian for many years. Iowa is one of the first States east of the meridian to deviate substantially from the Riparian Doctrine in an attempt to better manage its water resources. Under the Riparian Doctrine the right to use water is associated with the ownership of land contiguous to a water course. Iowa water law significantly restricts these water rights.

Iowa water law is discussed in the next chapter, especially in terms of the changes that Iowa has made in its water laws. The third chapter outlines the efforts in Iowa toward producing a system of instream flow protection. The fourth chapter includes a decisionmaking model for predicting behavior in natural resources decisionmaking activities and, through the model, an analysis of the decisionmaking process regarding instream flows that occur in Iowa.

IOWA WATER LAW

Following the purchase of the Louisiana Territory from the French government, American settlers began moving into the area which was to become Iowa. One of the traditions that these pioneers brought with them was the Common Law of England, including the Riparian Doctrine of water rights. The basic premise of the Riparian Doctrine is that land owners next to a stream, or other body of water, have natural rights to the use of the water. Each land owner also has the duty to share, correlatively, the benefits of the water with other riparian owners (Gors 1971).

The riparian doctrine originated in water rich areas. The early uses of water were for milling, domestic consumption, household uses, and stock watering. These uses did not consume large amounts of water, so the doctrine was sufficient to meet the needs of the people.

NATURAL FLOW RULE AND REASONABLE USE RULE

There are two separate principles in riparian water law that are applied in different jurisdictions. The oldest principle is the "natural flow rule" (Gors 1971). The natural flow rule holds that each riparian landowner owns the right to use the water flowing in the stream and that no riparian may withdraw or use so much water that the amount of water flowing to lower riparians is substantially diminished.¹

Iowa adhered to this rule as late as 1894 (Gors 1971). However, by 1897, the Iowa Supreme Court began to allow some encroachment on the natural flow rule. The Court stated:

While one riparian proprietor may not divert the water of a system so as to deprive a lower proprietor on the same stream of the benefit thereof, such upper proprietor may reasonably detail the proper water purposes [Gehlen Bros. v. Knorr, 101 Iowa, 700, 705; 70 N.W. 757, 759 (1897)].

At this point, the Court allowed the second principle of riparian water law, the principle of "reasonable use" to enter into Iowa water law. The natural flow rule restricts the development of agricultural and industrial

¹This paper follows the common legal usage and refers to owners of riparian land as "riparians."

uses. The concept of reasonable use evolved to overcome this restriction. The reasonable use principle allows riparian owners to withdraw or use water, even if that withdrawal or use diminishes the amount of water available, as long as the use is reasonable. The reasonable use principle resulted in water uses being defined as one of two types: natural or artificial. Natural uses are defined as the low consumptive uses, which qualified for water use under the natural use rule. Artificial uses are defined as uses that are not directly related to the necessities of life, such as mining, manufacturing, irrigation, power production, and watering of large herds of animals (Gors 1971). While the natural flow principle establishes every riparian as equal in right, the reasonable use principal differentiates between riparians based on the type of water use. In Iowa, the reasonable use principle establishes natural users as the highest class of users, with artificial users subordinate to natural users. In other words, if there is insufficient water available for both "natural" and "artificial" uses in a stream, the natural uses will receive water and the artificial uses must either be curtailed or stopped. There can also be a differentiation among various artificial uses. Iowa common law holds that reasonable use, among artificial users, is the test and basis for the water right. Reasonable use, according to the Iowa Supreme Court, depends on the size of the stream, the number of riparians, the needs of the riparians, the fall of the water, the type of soil, and other circumstances. The Court further stated:

In no case, however, is reasonable use to be determined in view of the necessities or business of any one proprietor, but the rights of each in the stream for artificial uses are to be determined in view of all of the circumstances as affecting all of the proprietors [Willis v. City of Perry, 92 Iowa 297, 303; 60 N.W. 727 (1894)].

Priority, under the riparian doctrine, cannot be established by putting water to first use. It is entirely dependent on ownership of riparian land. The riparian doctrine prevailed in Iowa until the 1950's.

BEGINNING OF PERMIT SYSTEM

In 1947, the Iowa Legislature created the Interim Flood Control Committee. The main purpose of the Committee was to study the possible need for laws covering the control and use of water in Iowa. The Committee was asked to submit drafts of recommended legislation.

One of the recommendations of the Committee was for the Legislature to create a State Water Control and Resources Council. The functions of the Council would include studying the problem of preserving the State's ground-water and coordinating the activities of Federal, State, and local governments regarding flood control and water supplies. In 1949, the Legislature established the Iowa Natural Resources Council and assigned it the functions recommended by the Committee, along with the authority to develop a Statewide water control and protection plan (Hines 1967).

The Natural Resources Council has nine members, appointed to 6-year terms by the Governor, with the concurrence of the Senate, from the electors of the State at large. The primary requirement for appointment to the Council is

expertise in the water resources and development field. The Council meets a minimum of four times per year, but can meet as many times as necessary to conduct business concerning Iowa's water laws. The Council averages thirteen meetings per year (Hines 1967).

The Council inventoried the State's water resources between 1952 and 1956, a series of drought years. Farmers responded to the moisture shortage by withdrawing water to supplement rainfall in irrigating their crops. Municipalities that relied on surface sources for this water supply were faced with the prospect of losing their supply because of upstream withdrawals by riparian irrigators. According to reports, a river was pumped dry for 6 weeks at one town in western Iowa. During this period the town dumped raw sewage into the dry channel, creating a severe health hazard. The competition for water reached such a high level by 1955 that the Legislature created the Iowa Study Committee on Water Rights and Drainage Laws (Gieseke 1978). According to Hines, the primary purpose for the Committee was to (p. 13):

... present a comprehensive report which would include a consideration of all water problems or potential problems, existing legislation, court decisions, and any Federal laws which would provide assistance in the area.

The Committee studied many laws that were being proposed in other States with humid climates at the time, most notably Wisconsin, North Carolina, and Mississippi (Hines 1967). The Committee held public hearings throughout the State. The Committee also met with representatives of the Farm Bureau, the Iowa Manufacturers Association, utilities, irrigation equipment facilities, municipalities, engineering societies, well drillers, vegetable growers, educators, county boards of supervisors, Iowa State Agency officials, and others (Baldwin 1970). The Committee reviewed its findings and drafted proposed legislation, which was submitted to the Legislature. After several years of drought the Legislature desired to regulate the State's water resources in the public interest, and the draft legislation passed both houses without a single dissenting vote (O'Connell 1962).

IOWA'S PERMIT SYSTEM

The Iowa Statute of 1957 is a mixture of the Riparian Doctrine's reasonable use principle and a western State style permit system. The riparian doctrine portion of the law stands out in two parts, the exemption from permits for natural riparian uses and the minimum flow concept.

The exempt uses are (Hines 1967):

- 1) Ordinary household purposes and use of water for poultry, livestock, and domestic animals;
- 2) Any beneficial use of surface flow from rivers bordering Iowa;
- 3) Use of groundwater on islands or former islands situated in such rivers;

- 4) Existing beneficial uses of water within the territorial boundaries of municipal corporations on May 16, 1957, except that industrial users of water, having their own water supply within the territorial boundaries of municipal corporations, shall be regulated when such water use exceeds 3% more than the highest per day beneficial use prior to May 16, 1957; and
- 5) Any other beneficial use of water by any person of less than 5,000 gallons per day.

The exemption for ordinary household and other domestic purposes comes from the idea of natural users in the riparian doctrine. The exemption for users of border rivers was established for several reasons. First, there is a problem in regulating users of border streams in Iowa when the adjacent States do not have similar restrictions. The problem of controlling use is largely offset by the fact that large quantities of water are available in the border rivers. Second, there were concerns about regulation raised by a number of irrigators on former islands of the Mississippi River. The Legislature gave them an exemption from the regulation of groundwater use. The exemption for the use of ground water on islands and former islands was removed from the statute in 1971 (Wiegand 1982b). The exemption for the municipality use is a limited one in the statute; new uses can be subject to regulation as the water requirements increase over time. The final exempted use is the 5,000 gallon per day limit. This amount is roughly equal to the flow, at moderate pressure, through a home garden hose in 24 hours.

The minimum flow concept was taken from Mississippi law and a South Carolina bill that did not pass (Hines 1967). In Iowa, the Legislature enacted a minimum flow provision in the new water statute. The definition of minimum flow in Iowa is (Hines 1967):

- 1) The average of minimum daily flows occurring during the preceding years, chosen by the Council as representative of the changing conditions and needs of a given drainage area at a particular time; or
- 2) Minimum daily flows shown by experience or official discharge records to be the limit at which withdrawals would be harmful to the public interest. (See Code of Iowa Sect. 455A.1 for the definition of "established average minimum flow.")

Once a minimum flow level has been established on a river or stream, new permits cannot be issued that would violate the flow. Hines states that:

Minimum flow protection reflects certain water management decisions with which not all commentators agree, but sound or not, it is a matter of water policy that Iowa has developed to an unparalleled degree and is a very important aspect of the Iowa permit system (Hines 1967:519).

How the minimum flow level affects existing permits is discussed later in this report.

All depleting uses that are not exempted are subject to regulation. The authority for the regulation comes from a section of the statute that declares the State's interest in water resources:

Water occurring in any basin or in any watercourse, or other natural body of water of the State, is hereby declared to be public waters and public wealth of the people of the State of Iowa and subject to use in accordance with the provisions of this chapter, and the control and development and use of water for all beneficial purposes shall be in the State, which, in the exercise of its police powers, shall take such measures as shall effectuate full utilization and protection of the water resources of the State of Iowa.

Depleting uses are defined in such a manner that almost every conceivable use is covered by the regulations. Permit authority for the withdrawal, diversion, or storage of water for beneficial uses rests with the Natural Resources Council (NRC). The statute states that the NRC should grant permits for proposed diversion, storage, or withdrawal if the proposed uses are not detrimental to the public interest or owners with prior or superior rights.

Beneficial use in Iowa is defined as the application of water to a purpose that gives benefit to the water user. Similar to provisions in water law in western States, beneficial use prohibits the waste of water. An interesting provision in the beneficial use definition is that, although pollution of water is listed as a nonbeneficial use, a definition of pollution is not provided. Pollution control has rested with the Iowa Pollution Control Commission and its successor, the Department of Environmental Quality's Division of Water Quality. The Legislature has passed a law that combines the Department of Environmental Quality with the Natural Resources Council as of July 1, 1983 (Wiegand 1982a,b).

According to the 1957 statute, a permit is required for the following users (Hines 1967):

- 1) Any municipal corporation or person supplying a municipal corporation which increases its per day water use by one hundred thousand gallons or three percent, whichever is greater, above its highest per day beneficial use prior to the effective date of the statute.
- 2) Except for a nonregulated use, any person using in excess of five thousand gallons of water per day, diverted, stored, or withdrawn from any source of supply except a municipal water system or any other source specifically exempted
- 3) Any person who diverts water or any material from the surface directly into any underground watercourse or basin. Provided, however, that any diversion of water or material from the surface directly into any underground watercourse or basin existing upon [the effective date of the statute] shall not require a permit if said diversion does not create waste or pollution.

- 4) Industrial users of water having their own water supply, within the territorial boundaries of municipal corporation, shall be regulated when such water use exceeds three percent more than the highest per day beneficial use prior to ... the effective date of the statute.

OBTAINING A PERMIT

The procedure for obtaining a permit is (Hines 1967):

- 1) An application must be made in writing to the Council setting out the designated beneficial use for which the permit is sought and the specific limits for quantity, time, place, and rate of diversion, storage, or withdrawal. A fee of \$25.00 must accompany the application. [This fee may change after July 1, 1983 (Wiegand 1982b)].
- 2) After receiving the application, the Water Commissioner schedules a hearing, usually in the county where the permit is sought. Notice of hearing is published by the Water Commissioner "once each week for two consecutive weeks in a newspaper of general circulation in each county in which the property affected is located." The date of the last published notice must be 10 to 30 days prior to the hearing. Notice is also sent by regular mail to interested State departments and other persons who have filed a written request for notification of any hearings affecting a designated area. The mailed notices must be sent prior to the last published notice.
- 3) Interested persons may appear and present evidence at the hearing. They may also be represented by counsel who can cross-examine other attendees who present evidence. The Council has promulgated more particularized rules for the conduct of the hearings. After the hearing, the Water Commissioner files a written determination with the Council that contains his findings. A copy of the determination is mailed to the applicant and to other persons who attended the hearing and submitted a written request for a copy.
- 4) Any party aggrieved by the determination of the Water Commissioner may appeal to the Council within 30 days of the date the determination is filed. The Director will then schedule a hearing before the Council and send notice to all persons that appeared at the hearing before the Water Commissioner. The Council hears the appeal, files its determination, and mails copies of the determination to the applicant and other persons who request it. A further appeal can be made to the district court of the county where the affected property is located. After a decision by the district court, the normal rights of appeal to the Iowa Supreme Court apply. (See: Iowa Administrative Procedures Act Code of Iowa, Chap. 17A.)

The Iowa permit statute requires that the Water Commissioner grant a permit if the investigation shows that there will be no harm to the public interest as a result of the permit. A provision in the law restricts permits to a maximum of 10 years (Hines 1967). Permits can be renewed any number of times, and the permit is considered an appurtenance to the land. Permits may be transferred by change in ownership or leasing of the land. In a transfer, the new owner must abide by the stipulations in the permit and must use the water beneficially.

MODIFICATION AND CANCELLATION OF A PERMIT

A permit can be cancelled or modified by the Natural Resources Council under certain conditions, including: (1) if the permittee consents to the change; (2) if the conditions and terms of the permit are broken; (3) if a permit is not used for 3 consecutive years; (4) if there is a violation of any pertinent law; or (5) if, after notice and a hearing, it is found necessary to modify or cancel the permit to protect public health and safety, public interests in lands and waters, or private interests (Hines 1967:515-516).

The Water Commissioner may temporarily suspend operations under a permit if it is necessary to do so in order to protect the public health and safety, public interest in lands or water, or persons and property. There are no provisions for hearings on these temporary actions.

The Council has the authority, under its enforcement powers, to investigate and stop unauthorized uses. The normal procedure is that someone files a complaint about someone else using water for a nonexempted purpose without a permit. The Council investigates the complaint and, if there is a violation, the violator is subject to a maximum penalty of \$100 and 30 days in jail. Each day of continued violation after Council action is a separate offense.

SUMMARY

Developed during the drought of the 1950's, the Iowa permit system is a classic example of a State implementing a water resources regulation system that is specifically suited to its needs. Iowa has retained rudiments of the riparian doctrine for low demand natural users, while implementing a regulatory system for "artificial users." The effect to date of the regulation of artificial users has been the development of a sense of certainty about water use that the riparian doctrine does not contain. This certainty occurs because there is an administrative system in place for handling the State's water resources. Permittees are aware of the procedures for handling water shortages and have a solid basis from which to plan, and implement, water activities.

Although the permit system is not perfect, it has been in existence for 25 years and seems to function very well. There has been some limited controversy surrounding the permit system, but the system has been well received by the water use community at large (Wiegand 1982a). The Iowa system is a successful example for other riparian States of how to manage water resources in a way that effectively handles shortages and still provides certainty.

THE INSTREAM FLOW QUESTION

Iowa has a unique history regarding instream flow issues. With the exception of California, which employs a mixture of the appropriation and riparian doctrines, other States that have instream use protection programs use appropriation doctrine jurisdictions. Iowa was a riparian doctrine State until the passage of the permit law in 1957, and there has always been an emphasis on maintaining streamflows in order to deliver water to downstream riparians. Therefore, the question of protecting instream flows was not as controversial in Iowa as it has been in some other States. It should be noted that the primary goal of the protected flows provision in the 1957 law was to guarantee water for the "natural" users who are exempt from the permit process. However, the Iowa Natural Resources Council has interpreted the statute broadly to encompass many instream uses of water (Wiegand 1982a). Moreover, Sections 455A.17 and 455A.18 (Code of Iowa) expressly reference the needs of fish, wildlife, and recreation.

ESTABLISHING THE MINIMUM FLOWS²

One of the first questions facing the Council's staff after the passage of the permit statute was "At what level should the required protected flows be set?" The statute left it up to the Council to establish flow levels based on the average daily minimum flows, as representative of changing needs and conditions, and the minimum daily flow levels beyond which the public's interest would be damaged by withdrawals.

The staff sought minimum flow levels that would provide water for the "natural" users, fish and wildlife, aesthetic use, dilution of wastes, navigation, and all other instream uses (Gieseke 1978). There was a need to establish the flow levels quickly because permits for irrigation could not be issued until the minimum flows were established. Available stream records were studied in an attempt to determine if a flow pattern existed that would adequately protect all instream uses.

²Generally speaking, the term "minimum flow" has a specific technical meaning related to the minimum amount of water flow needed to maintain a viable use for a specific time. In this report, "minimum flow" has a meaning consistent with the Iowa Statutes; i.e., "minimum flow" is comparable to the term "instream flow regime", or the schedule of stream flows that is sufficient to maintain a viable instream use.

The Council's staff was unable to find such a pattern, and they commissioned the Iowa Geological Survey and the U.S. Geological Survey to conduct minimum flow studies. These agencies studied up to 60 variables on at least three different drainage areas, but could not determine a pattern of flows that would protect all instream uses. The Council's staff had only (Gieseke 1978:14) "... limited aquatic studies; and limited fishing pressure and fishing success studies; and minimum flows needed for water quality purposes" on which to base their recommendations. In spite of the limited amount of available information, the Council began to set flow levels based on the median low flows for July and August over the period of record. About the same time, the U.S. Geological Survey released a bulletin titled Low Flow Characteristics of Iowa Streams, which detailed the amounts of water in Iowa streams, along with the timing of those flows. Low flow levels were established with the cooperation of the Council, the Iowa Conservation Commission (which is responsible for Iowa's fish and wildlife resources), the Iowa Department of Health, and various cities on the affected rivers. July and August flows were used because irrigation withdrawals are at or near their highest levels then, and irrigation was the major consumptive use of water at that time.

Data in the U.S. Geological Survey bulletin was plotted against the newly established flows, and the established levels were in the 80% to 90% (average = 84%) duration flow range between April and September (Wiegand 1982a). Minimum flows currently specified in the Council's administrative rules generally fall in the 80% to 90% duration flow for the April through September period (Wiegand 1982b).

MANAGEMENT OF ESTABLISHED MINIMUM FLOWS

The Water Commissioner cannot allow withdrawals of water below the minimum flow level. A hearing must be held by the Water Commissioner prior to the granting of a water use permit and notice of the hearing published for a 2-week period in a paper of general circulation in the county where the proposed withdrawal would take place. For many years, the hearings were usually held in the courthouse of the county involved. At the hearing, information is presented on whether or not the proposed permit would affect the minimum flow level (Wiegand 1982a). If there is no conflict, the permit is granted. If conflict is apparent, the proposed permit is either conditioned to remove the conflict or denied.

State agencies provide information at the hearings. The Iowa Conservation Commission (ICC) manages recreation and natural resources and, with the Department of Environmental Quality, presents information on how the proposed permit would affect fish and wildlife and water quality. The ICC also comments on the effects of the permit on recreational uses. The Water Commissioner can decide to either condition or refuse the permit on this basis. Large municipalities, and other interested parties, can testify at the hearings about the effects of the proposed withdrawals on the rivers and streams that flow through their boundaries (Gieseke 1978:14).

The Natural Resources Council also requires groundwater users to obtain permits. The Council regulates wells within 1/4 mile of a stream or river in

order to preserve the minimum flow levels. On watercourses that drain more than 50 square miles, the withdrawal of water from unconsolidated aquifers within 660 feet of the stream must stop when the flow in the stream is at or below the minimum level. Wells between 660 and 1,320 feet from the stream must stop operation when the stream flow reaches the 7-day, 1-in-10 year low flow (Gieseke 1978:14). The withdrawal of groundwater for consumptive use from watersheds of less than 50 square miles is regulated slightly differently. In these cases, withdrawals cannot exceed 200 gallons per minute if the well is within 1,320 feet of the stream. Withdrawals of groundwater from wells within 660 feet of the stream are considered the same as withdrawals from the stream; as such, they must stop when water levels drop to the minimum flow (Gieseke 1978:14-15).

The Water Commissioner traditionally has notified permit holders in advance by letter or telephone of possible curtailment in their withdrawal patterns due to low flows. When the stream approaches the minimum flow level, the Commissioner notifies permit holders by telephone that they must stop their withdrawals (Aiken 1967:6).

In order to administer the minimum flow requirements, streams have been divided into segments with minimum flow level designations. The Water Commissioner has developed a concept called "summation flow" for administering segments where there is more than one consumptive user (Hines 1967:544). The summation flow concept comes into operation when the flow in a stream segment falls below the minimum flow level plus the total amount of permitted consumptive uses. When the combined level is reached, all permittees on the segment must cease withdrawals unless the permittees have a sharing plan that has been approved by the Water Commissioner. The sharing plan is an agreement between the permittees on a section to divide the water for consumptive use between all of the consumptive uses and the minimum flow level.

Another means of providing water for consumptive uses, while maintaining the minimum flow, is through storage (Gieseke 1978). The Council encourages users to store water during high flow periods for later release for consumptive uses. The Council also allows permittees to withdraw water from streams even though the minimum flow has been reached, provided that they discharge enough water to replace their consumptive withdrawals.

ROLE OF OTHER AGENCIES

Department of Environmental Quality

The Natural Resources Council is not the only agency that sets flow standards on Iowa streams. The Department of Environmental Quality (DEQ) sets standards in order to protect water quality (Turkle 1982a). However, the flows set by the DEQ are at the 7-day, 1-in-10 year low flow level. Thus, flow levels set by the DEQ are at a lower level than those set by the Council. According to Wiegand (1982b), the 7-day, 1-in-10 year low flow is used to determine the degree of wastewater treatment that must be provided for a point discharge.

The DEQ is responsible for administering Iowa's responsibilities under the U.S. Clean Water Act of 1977. A portion of this role is to regulate both the point and nonpoint water pollution sources in the State. Because of this regulation, the DEQ is concerned with water quality standards for drinking water sources, swimming, recreation, and aquatic life (Turkle 1982a).

The DEQ provides the Natural Resources Council with information and advice on permit applications by testifying at the Council's hearings on the effects of a proposed permit on the water quality aspects of the stream. The Council can either accept, modify, or reject the DEQ's recommendations. As mentioned earlier, Iowa will combine the water quantity and water quality functions when the DEQ and the Council are merged.

Interestingly, the DEQ staff has reported on one of the few points of controversy regarding Iowa water administration. Municipal and industrial water users who are required to treat their waste water are becoming more aggressive in an attempt to cut costs and add flexibility to the water quality standards. As a result, DEQ staff expects that the rigid standards for water quality that have been used in the past will give way to a more flexible implementation of the standards that will still accomplish the water quality goals (Turkle 1982a).

Iowa Conservation Commission

The Iowa Conservation Commission (ICC) is responsible for the management of the State's fish and wildlife resources. The ICC gathers data on the effects of proposed permits on the State's fish and wildlife resources and testifies at hearings on permit applications. The Council can accept, modify, or reject the ICC's recommendations regarding permit applications. Both the ICC and the DEQ apparently have a close working relationship with the Council, and the Council is dependent on both agencies for biological information (Wiegand 1982a).

The ICC also makes recommendations to the DEQ regarding the water quality needs for fish and wildlife. As is the case with recommendations from the ICC to the Council, the DEQ can accept, modify, or reject the ICC recommendations. More often than not, the DEQ accepts ICC recommendations (Turkle 1982a).

OTHER PROGRAMS FOR PROTECTING INSTREAM FLOWS

Although the minimum flow levels approach used by the Council is the most effective method of protecting instream flows in Iowa, it is not the only approach used.

Protected Streams

Another means of protecting instream flows in Iowa is through the designation of streams or sections of streams as protected streams. In Iowa, a permit is required before any stream channelization can take place. Because channel modifications often impact instream uses, the Council can designate streams that drain less than 10 square miles as protected streams. Channel modifications are generally prohibited on streams that have been designated as

protected streams (Aiken 1983:22), except in exceptional circumstances and when mitigation occurs. The Council also asks the ICC to review all channelization permit applications. The Council considers the ICC's comments when making a decision on the permit application. The authority for the channelization regulation by the Council stems from legislative action in 1957 to protect flood plains (Wiegand 1982a).

Scenic Rivers

Iowa also has scenic rivers legislation. The ICC is empowered, by statute [Iowa Code Ann. 108 A.2 (1980 Supplement)] to designate a stream or section of stream a natural river area if it possesses valuable scenic, fish, wildlife, historic, or recreational values (Aiken 1983:10). The area to be preserved should include enough land adjacent to the stream to protect its natural character. The problem with the scenic river system is that the ICC does not have the authority to regulate the land uses that is necessary to meet the objectives of the scenic river designation. Instead, the ICC must rely on local governments to regulate land uses, through zoning and other means, so that the goals of the designation can be met. The ICC informs the local government agencies that would be responsible for land use controls in a scenic river designation of necessary standards and guidelines for land use controls.

The ICC was asked to produce a detailed Statewide plan for the establishment, management, use, and administration of the scenic rivers system. In 1981, the ICC completed its plan, entitled Iowa Protected Water Areas: General Plan. The Protected Water Areas (PWA) concept of the ICC is different from the original scenic rivers system in that it considers protection for lakes and wetlands, as well as flowing waters. The ICC went to the Iowa Legislature with the new concept and received 2 years of funding for implementing the plan (Szcodronski 1982a). Water areas were systematically evaluated for potential designation as protected water areas using a series of "filters" to measure a variety of resource values (Szcodronski 1982b). The filters are designed to be screening devices that progressively identify "high quality" water areas in the State for possible protection (Iowa Conservation Commission 1981).

The first filter differentiated between naturally occurring and manmade water features. Only naturally occurring water areas progressed to the second filter.

The second filter separated land use patterns along waterways into three categories: developed (urban/residential); agricultural; and woodlands. Water areas surrounded by developed lands were considered of low potential for inclusion into the PWA program, while water areas surrounded by agricultural lands were considered of medium potential. Water areas surrounded by woodlands were considered of high potential for protection and progressed to the next filter.

The third filter evaluated 3,255 miles of rivers and streams, 14 lakes, and 12 marshes. Aerial surveys were used to assess the qualities of the water areas. The key determinant was whether or not there was evidence of man's presence. In this process, tree cover was considered a plus, while channelization, impoundments, roads, railroads, utility lines, and buildings

were negative factors. The Commission's staff assigned numerical values to each river mile and to each quarter-mile of lake and marsh shoreline.

The fourth filter was "designed to select those areas which best represented the natural qualities of a lakeshore, river corridor, or marsh in each of the seven landforms of Iowa" (Iowa Conservation Commission 1981:6). This evaluation was more subjective in nature than the previous filters because it relied on ICC field staff recommendations, aerial survey results, and present land ownership.

The fifth filter was designed to select the first area to be recommended for inclusion in the PWA program. The criteria for this filter were (Iowa Conservation Commission 1981):

- 1) Local public response and support;
- 2) Proximity to major population centers; and
- 3) The status of the area in terms of its priority on existing county conservation board and Commission projects and programs.

The Boone River in Hamilton County, from Webster City to its confluence with the Des Moines River, was chosen as having the most favorable conditions for the first PWA master plan. The ICC staff also recommended that the Upper Iowa River in Winneshiek and Allamakee Counties be given immediate consideration for inclusion in the PWA program because it is the only designated "natural river" under the State's Scenic Rivers Act.

There were several actions needed prior to the preparation of a PWA master plan for the Upper Iowa River. First, better relations between persons wishing to establish a protection program for the River and local landowners needed to be developed. Local resistance to attempts by the State government to protect the river has resulted, in part, from a forceful attempt by the Federal government to include the River in the National wild and scenic rivers system (Aiken 1983:12). The use of Federal condemnation powers for lock and dam structures related to navigation on the nearby Mississippi River has added to local concerns. Apparently, there is also a concern that PWA designation could interfere with local agricultural practices. In addition, the ICC sees a need to study the requirement for improved recreational management on the river before or as a master plan is prepared in order to understand and improve relationships between landowners and river users (Szcudronski 1982b).

There are several means available for the ICC to protect a water area. The ICC can acquire lands through purchase or donation. While the ICC has limited authority, its policy is to deal only on a willing seller-willing buyer basis for the PWA program (Szcudronski 1982b). The ICC can also acquire conservation easements, or other leasing arrangements, from local landowners. The ICC can try to convince local government officials to use their authority to zone land uses in the designated area (Iowa Conservation Commission 1981). The use of tax credits to encourage landowners to manage their lands in a manner consistent with a PWA designation came about when the legislature passed the "Slough Bill" (Szcudronski 1982a). The bill provides possible tax exemption for wetlands, rivers, forests, and lakes. The "Slough Bill," passed

in 1982, is administered by the counties (Iowa House File; 2351). Another bill, the Fruit Tree and Forest Recreation Act (C. I. Chap. 161.1 et seq.), provides similar opportunities for fruit tree or forest reservations.

The PWA General Plan recommends a four step process for the preparation and implementation of a master plan. First, the ICC would designate an area, on an interim basis, for potential inclusion into the PWA program. Interim designation merely identifies areas for which the ICC will prepare a master plan. While the ICC cannot regulate land uses in the interim areas, attempts can be made to encourage landowners to voluntarily maintain land use patterns that are compatible with PWA program objectives. Any individual, group, or agency may suggest an area for interim designation.

Second, the ICC must prepare a PWA master plan for the area within 2 years of interim designation. The master plan would (Iowa Conservation Commission 1981:9) "document the resources to be protected, delineate the protection boundaries, select the protection methods, describe the preliminary negotiations with landowners, and estimate the staff and funding requirements for permanent designation."

Third, the ICC would review the plan and, if satisfactory, approve the plan and forward it to the Governor of Iowa. The Governor would have the final authority on whether or not the area would be designated as part of the PWA program. These rules are under review as of this writing and may be amended to allow ICC to be the final authority for PWA designations (Szcodronski 1982b).

The fourth step is the actual implementation of the master plan. This step depends on the ICC receiving adequate funding from the legislature to enter into agreements with willing landowners to manage the resources according to the guidelines in the master plan.

The document Iowa Protected Water Areas: General Plan (Iowa Conservation Commission 1981) contains several suggested revisions to the Iowa Scenic Rivers Act:

- 1) Allow for the protection of lakeshores and marshes, as well as rivers, under the same authority, and make the title of the Act more general, such as Protected Water Areas Act;
- 2) Define the process the ICC would use to designate areas into the program;
- 3) Identify alternative protection and management methods;
- 4) Emphasize the importance of ICC and landowner cooperation;
- 5) Establish amendment and judicial review procedures for changing ICC-landowner agreements;
- 6) Provide for local tax reimbursements for loss of revenue to local governments due to PWA designations; and

- 7) Better define the public's right to navigate in order to alleviate conflicts with the State law that requires landowners to contain their livestock, even if a fence is needed across a river.

The ICC's stated management objective in the PWA program is that a variety of land uses can coexist with protected river segments, lakes, and marshes. Land uses that would be allowable in a protected area include livestock raising, timber production, perennial and row crop production, residential housing, and recreational activities. The key to successful coexistence with protected water areas is that the above activities occur in a manner that minimizes adverse impacts on other uses and the natural character of the area. The General Plan proposes the following guidelines for the management of PWA areas (Iowa Conservation Commission 1981):

- 1) Utilization of sound agricultural practices to minimize soil erosion, particularly on areas immediately adjacent to lakes, rivers, and marshes;
- 2) Maintenance of all woodlands, with any timber harvests accomplished according to a professional forester plan;
- 3) Provision for only those recreation facilities and opportunities which do not detract from the area's natural and scenic qualities;
- 4) Private property will not be open for public recreation unless an agreed-upon public access easement states otherwise;
- 5) Residential land uses should be limited to low density, single-family housing, and located in a manner which is sensitive to the natural environment;
- 6) Exclusion of commercial and industrial land uses; and
- 7) Minimization of road and utility road rights-of-way.

The General Plan also contains conclusions and recommendations concerning Iowa's water resources.

At the time of this writing, the legislature is in the process of reviewing the PWA program and its recommendations (Szcodronski 1981a).

SUMMARY

There has been little controversy in the establishment and management of systems to protect instream flows and values in Iowa. The reason usually given for this lack of conflict, both in the literature and by involved parties, is that Iowa established these systems prior to a time of water shortage. Thus, Iowa has saved time and avoided conflict by anticipating problems and developing solutions in advance.

INSTREAM FLOW DECISIONMAKING IN IOWA

Iowa is the fourth State included in this series on the different methods that various States have used to protect instream flows. In the second paper (on California) a decisionmaking model, developed by Berton L. Lamb and Paul L. Beckett, was included to help explain why the decisionmaking process developed as it did in California. The earlier papers expanded the model and extensively reviewed the decisionmaking process illustrated by the model. The model was used as a tool to explain developments concerning water management in California and Idaho (Olive 1981a, 1981b). In trying to apply the model to Iowa, the question is whether or not the low level of controversy will result in agency behavior that is significantly different than that reported in the earlier papers.

POLICY THRUSTS

Bureaucratic decisions have far reaching impacts on the allocation of stream resources. The decisionmaking process that influences bureaucratic decisions is a reflection of the political and administrative climate in a State. Therefore, a method of analysis that enables individuals to determine the political climate in a State starts with the concept of pluralism.

Pluralism is the balance of power among a number of groups, with diverse goals and overlapping membership, where each group is restrained from excess by the adjustments it must make with competitive groups (Morrow 1975). Thus, there arise relatively stable interest groups that champion policy positions important to them. Once a group achieves a threshold of power, the positions advocated by the group will be seriously considered by governmental decision-makers.³

Societal forces that give interest groups their strength change over time. Caulfield (1959) has developed an explanation of the changes that have occurred in American society regarding resource policy by dividing the history of resource policies into four thrusts. The first thrust is the "development"

³One of the definitions of power, according to Barnhart (1963:666), is: "... one who or that which exercises authority or influence..." For the purpose of the remainder of this paper, the term power means the ability to command enough influence to force government decisionmakers to consider positions advanced by a group or by an individual.

thrust, which is the use of resources to promote the economic growth of the Nation. Federal government policy has been traditionally favorable to this thrust. One of the outcomes of this thrust was the development of water resources for irrigated agriculture in the West. It soon became apparent, however, that greater financial and technical resources were necessary to develop water for irrigation than the States and private investors had available to them. Federal governmental policies and legislation, such as the Reclamation Act of 1902, were developed to assist in this development (Caulfield 1974). A broad base of political support for this publicly financed development was provided by railroads, irrigators, farm suppliers, and others.

The second thrust was the "progressive" thrust, based on the idea of egalitarianism, with a focus on individualism. This thrust also affected public policy regarding water. The strong backing for the family farm, by the proponents of the progressive thrust, led to the provision in the Reclamation Act of 1902 that Federally-developed water would only be delivered to family farmers who resided on their land (Caulfield 1974). This provision, commonly referred to as the 160 acre limitation, has been a point of controversy ever since its inception. The progressive thrust has also affected the sale of the hydroelectric power that is generated by Federally funded water projects. Several provisions have been placed in Federal laws stating that the sale of hydroelectric power should, preferentially, be to public bodies and rural cooperatives.

The "conservation" thrust is the third thrust; it is based on the development of resources and their wise use (e.g., multiple use and sustained yield). This thrust was developed by a scientific elite out of a sense of concern, in the latter part of the nineteenth century and the early portion of the twentieth century, that the "wise stewardship" of the country's resources was necessary to prevent "exploitation" and "dissipation" (Caulfield 1959). This thrust was based on the belief that hydroelectric power was the only reliable, cheap, and replenishable source of energy available to the Nation. Thus, the thrust encouraged water policy that supported the maximum development of hydroelectric power. This group also believed that "unjustifiable" gains would accrue to private groups and individuals if they were allowed to own hydroelectric sites. Therefore, the thrust pressed for public regulation, or ownership, of the hydroelectric sites. Proponents of the thrust were concerned with the effects of irrigation on soil characteristics related to the ability of the soil to withstand droughts, prevent erosion, and maintain ground cover (Caulfield 1974).

The fourth thrust, the preservation thrust, had little political power until very recently. This thrust supports preserving nature in a manner so that other forms of life, besides man, are undisturbed. The preservation thrust finds its roots in John Muir and the Sierra Club, which he founded in the 1890's. The first evidence of the preservation thrust entering into the western water policy arena was in 1913 when the Hetch Hetchy controversy arose. In this controversy, the preservationists argued that San Francisco should not be allowed to construct a series of reservoirs, intended for municipal water and power supplies, in Yosemite National Park. Proponents of the conservation thrust countered by arguing that the development of water for utilitarian purposes was more important than the narrow goal of preservation,

and this argument held the day. While the development thrust has been the major thrust in water policy, the progressive and conservation thrusts have also influenced water policy.

The preservationists surfaced again on water policy matters in the 1950's, when it was proposed that the Echo Park Dam be constructed in Dinosaur National Monument (Caulfield 1974). In this case, the preservationists were successful in persuading Congress to delete the proposed dam from the Colorado River Storage Project Act of 1956. The preservation thrust was gaining in political strength.

With the development of increased concern for the environment, the preservation thrust, now closely identified with the environmental movement, has entered into the western water policy arena more and more often. An example of the increased impact of the preservation thrust is the Council's interpretation of the water permit act to define as broadly as possible the provision on protecting instream uses.

INTEREST GROUPS

Groups are formed in society to advance the positions held by proponents of specific interests. Generally speaking, a group is formed when individuals with common interests band together formally or informally to press their demands on government. Groups do not always encompass the whole pattern of thought behind the thrust with which they are identified. In fact, most groups tend to press for the adoption of policies that affect a narrow interest. An interest group can be further defined as (Dye 1975:21):

... a shared-attitude group that makes certain claims upon other groups in society; such a group becomes political if and when it makes a claim through or upon any of the institutions of government. Individuals are important in politics only when they act as part of, or on behalf of, group interest. The group becomes the essential bridge between the individual and his government. Politics is really the struggle among groups to influence public policy.

The key to a group's influence is its relative power. This power is determined by a number of factors, such as economic resources, size, strength of purpose, access to decisionmakers, leadership, and internal cohesion. The reaction of one interest group to the policy demands of another interest group is often based on how those demands will affect the first group's stated, or perceived, position. If the demands will have little effect on the first group, response will probably be slight. However, if the demands will adversely affect the first group's position, there is likely to be opposition. The intensity of the opposition is directly proportional to the perceived effect the second group's demands will have on the first group's primary mission. For example, farmers and ranchers may be bitterly opposed to water quality regulations that would alter their traditional agricultural practices. The same farmers and ranchers may have little opposition to, or actually be supporters of, a water quality proposal that they believe will benefit them.

Groups generally operate under several constraints, such as constitutional constraints, legal constraints, judicial interpretations, and, to a certain extent, regulations and executive orders. Because interest groups are not government agencies, they cannot form government policy. They must, therefore, attempt to convince decisionmakers of the validity of their position in order to get that position incorporated into public policy.

The process of convincing government decisionmakers to include a particular position in public policy can take many forms. First, interest groups can directly lobby legislators, chief executives, and government agency personnel. In Iowa, there has been little lobbying to date by persons who advocate protecting instream uses (Moorsman 1982; Dallegger 1982). The relative strength of interest groups often determines their success in obtaining the necessary access to government decisionmakers to make this strategy work. If an interest group has sufficient power, its position may be considered because of the group's ability to take political action against the decisionmakers. Interest groups that are closely aligned with particular government agencies are often successful at having their positions promoted. Interest groups also influence government officials by appealing their case directly to the public. The intent is to convince the public to pressure government officials into incorporating the group's position into public policy. The formation of the water/power initiative to place an instream flow protection system on the ballot in Idaho is an example of this type of appeal.

Another tactic is to contest, in court, government policies with which the group finds fault. This tactic has been frequently utilized by groups that have been identified with portions of the preservation thrust in the last few years. However, groups that identify with the other thrusts have also challenged government policies in court recently. For example, in Mountain States Legal Foundation v. Andrus, development oriented interests sued the U.S. Department of the Interior to act on applications for oil and gas leases before the Department of Agriculture completed its evaluation of these lands for wilderness designation.

In the instream flow area, interest groups can be categorized as either guardians or advocates. The use of these categories was first developed by Wildavsky (1975) to describe the workings of groups and agencies within the Federal budgetary process. The categories were applied to decisionmaking on instream flows by Beckett and Lamb (1976) and to areawide planning for water quality by Lamb (1980). The definitions of the two categories are (Beckett and Lamb 1976):

Advocates are groups that call for a change in the developmental approach to water allocation. They tend to rely on "crusading" and data to advance their position; and,

Guardians are groups that attempt to protect the productivity or market utility of water. These groups are often established and influential and utilize legal-political strategies to advance their positions.

Both advocates and guardians attempt to influence government decisionmakers into incorporating their positions in public policy. In Iowa, guardians

have been active in trying to change the current water quality standards regulations so that the regulations will be more flexible and less expensive. The administering agency's (DEQ) staff believe that the guardians will be at least partially successful in altering the standards to include more flexibility (Turkle 1982a).

Iowa is a special case where a system of protection was established prior to severe, long term water shortages. Iowa is also different in the form that instream use protection has taken because it has a history of being a riparian doctrine State. Thus, all four thrusts have been involved in determining public policy. The Protected Water Areas program proposed by the Commission is a good example of this mixture of thrusts because the PWA program combines protection for instream use with a variety of other land uses.

Both advocates and guardians agreed that something had to be done to alter the riparian system after the severe drought of the 1950's. The advent of the permit system was beneficial for both sides because it added the certainty that the guardians supported and the established minimum flows that the advocates desired. The guardians also supported the minimum flow concept because it provides water for downstream riparian uses. However, some guardians, primarily early irrigators, objected to having to obtain permits because they believed that their right to draw water out of the stream was a "God given right" (Gieseke 1978:14). The advocates were successful in the sense that the minimum flow concept that evolved covered many instream uses, rather than just providing water to downstream riparians.

The real question is whether or not the two groups will become adversaries if the growing demands for water begin to seriously press supplies. James Wiegand, of the Council's staff, believes that organized support for the minimum flow law would form if any serious attempts were made to change the law (Wiegand 1982a).

If groups do move away from their current status, the various groups will have to make adjustments in their policy positions to reflect the altered positions of the other groups. In other words, groups must often make compromises in their position in order to have their plans considered for incorporation into public policy. The result of the adjustment process by groups is public policy that is characterized by a mixture of preferences. This mixture is a result of the unequal power of the various groups and individuals, so that final policy is usually different from that which any one group or individual most desired (Allison 1971). It is important to realize that the group adjustments are made on a distant and impersonal basis (Lindblom 1977). That is, a group's policy positions are often adjusted to take into account another group's program after the group reviews, from a distance, the other groups' policy positions, rather than on a face-to-face basis.

GOVERNMENT AGENCIES

Government agencies make decisions in a manner similar to interest groups. Pressure from various interest groups leads to the factionalization of government through the creation of agencies that represent various group interests and policy concerns. Agency responses are conditioned by the different policy

arenas in which instream use decisions are made. Each agency plays a special role within its policy arena that is similar to one played by an interest group. By identifying these roles, the observer can predict agency behavior.

When a group achieves sufficient size and strength to place its policy concerns before the government, government agencies may be assigned to meet the "new" policy problems. These new agencies are separate from existing agencies, but functionally interdependent with them. Another response to the new policy problems may be for existing government agencies to increase the scope of their mission to "capture" a new and/or growing interest in society.

In Iowa, an example of changing an agency's mission to respond to new policy concerns would be the changes that have occurred within the Natural Resources Council. The Council evolved from an advisory board to the legislature to, in July of 1983, a portion of the new Department of Water, Air and Waste Management, which will be the controlling body over both the water quality and quantity functions of the State. The Council has also absorbed the flood plain regulations for the State. Thus, the Council has, through legislative mandates, responded to new water related interests that have developed in Iowa.

A government responds to new policy questions and interest groups either through establishing new agencies or by changing the role of existing agencies to encompass new concerns. Both of these responses lead to the cooptation of government institutions by well organized and financed interest groups that identify their interest with the common good (Morrow 1975). It is within this fragmented, pluralist system that the decisionmakers act to make government policy.

Several schemes have been developed by political scientists to describe government decisionmaking. Lamb (1980) and Doerksen and Lamb (1979) describe the decisionmaking arena concerning the question of instream flow protection. Their synthesis of agency decision styles can be applied to the decisionmaking in Iowa. These styles are:

- 1) Incrementalism;
- 2) Organizational process; and
- 3) Mutual adjustment.

Incrementalism

Incrementalism refers to agencies taking positions on problems that are only slightly different from previous policy positions and where the new positions tend to reaffirm existing policies. Incrementalism has advantages for the decisionmaker because it limits the risks and political costs of new decisions due to the fact that decisions are made incrementally that rely on the substance of past policies (Sharkansky 1975). This process is based on the concept of a "base" that can be a solid, unquestioned foundation for future policy actions. A major question is whether or not incrementally made decisions have any guiding direction behind them or if they just happen. Lindblom (1977) believes that incremental decisionmaking is rational and

guided by agency missions and that changes in the social structure can be made more rapidly through a series of directed incremental steps than through a few drastic changes.

The approach that the ICC has taken regarding the formation of the Protected Water Areas program is a good example for incremental decisionmaking. The Commission has proposed the program as activating and expanding the Scenic Rivers Act; therefore, the PWA program is an expansion of an existing program or "base."

Organizational Process

The organizational process occurs when agencies rely on existing organizational routines for the collection, analysis, and utilization of information relevant to a problem (Beckett and Lamb 1976; Doerksen and Lamb 1979; Lamb 1980). Allison (1971) believes that governmental decisionmaking can be understood less as deliberate choices and more as the output of large organizations that function according to standard operating procedures. The idea is that government organizations are so large that a central authority cannot make all the decisions or direct all of the important activities. This forces decisions to be made inside the agency through standard operating procedures. Another important aspect of the organizational process is that the standard operating procedures allow large numbers of individuals to handle situations, which arise daily, because of the low individual risk involved. In the cases where standard operating procedures do not apply, problems are often handled inappropriately or slowly. A drawback to the organizational process is that agency personnel often internalize the operating procedures and resist changes in existing procedures, thereby limiting flexibility and stifling creativity.

The ICC is viewed as a data collection agency by other agencies (Turkle 1982a). Thus, it is no surprise that the ICC process for considering which areas should be included in the PWA program is highly data collection oriented. The ICC collects data on recreation, wildlife, and fisheries, which is then used by other agencies (Turkle 1982b).

Mutual Adjustment

Mutual adjustment is a bargaining process among agencies. The outcome is a reflection of the relative influence of each agency, based on the size and influence of its constituency, type of responsibility, and closeness of the issue to the mission of the agency. Lindblom (1977) stated that the interdependence among the administration of the hundreds of governmental units in America often requires mutual adjustment. He also states (Lindblom 1977:29-30) "... that this mutual adjustment carries much of the load of coordination in any government." Allison (1971) believes that mutual adjustment results in a decision that is a mixture of conflicting preferences and a result of the unequal power of various individuals. The decision will be different from that which any of the individuals wanted. Mutual adjustment reduces the risk in decisionmaking because a decision can be supported with changes in content and style (Sharkansky 1975).

Decision Arenas

All three decisionmaking styles help explain the decisions made on instream flow issues in Iowa. In order to predict an agency's behavior concerning decisions on instream uses, attention should be paid to the behavioral aspects of these three decision styles. However, there is more to predicting agency behavior than recognizing the presence of incrementalism, standard operating procedures, and bargaining styles of decisionmaking. The first step to this expanded understanding is to explore the policy areas in which government operates. Lowi (1964) states that government policy operates in four basic areas: distributive policy; regulatory policy; constituent policy; and redistributive policy. Of these, the distributive and regulating policy arenas characterize instream flow decisionmaking in Iowa.

The distributive policy arena is where the government operates as a broker. Distributing the public lands to private individuals is a classic example of this policy arena. The building of coalitions through log rolling is the key to success in the distributive policy arena. Through this process, coalitions are built of interests that have little in common, except for the support of a particular distributive action. Thus, the policies are characterized by cooptation instead of conflict and compromise (Lowi 1964), and interagency bargaining is emphasized.

It is in the distributive policy arena that the instream flow protection question lies in Iowa. The main reason for this is that there are still plentiful supplies of water available in most parts of the State. The Council's emphasis on storage of water to avoid cutting off users during natural low flow periods is evidence of this distributive policy. Iowa is able to expand the number of water users, and the variety of uses, because there are still adequate water supplies and because of the State's water storage strategy.

The regulatory policy arena describes the situation where a number of groups compete to have their interests accepted as government policy. While distributive policies are formed around groups with uncommon interests, policies in the regulatory arena are formed by groups with shared interests. Because of this difference, coalitions formed in the distributive arena shift at a more rapid rate when interests change or conflicts of interest arise than do those in the regulatory arena.

Decision Model

Agencies often combine the decision schemes and policy arenas that describe the roles they play in the instream flow area. There are two basic types of agency roles: allocators and activists. The allocator agencies preside over decisionmaking, while the activist agencies are involved in confrontation (Beckett and Lamb 1976; Lamb 1980). These two types of agencies can be subdivided along lines of responsibility. The allocator category has two divisions, brokers and arbitrators. The activist agencies can be categorized as advocates and guardians (Beckett and Lamb 1976). Allocator roles are:

Brokers. Agencies that allocate water through their ability to physically control streams via impoundments. Brokers are in a position to support either environmental or developmental interests. They favor benefit-cost analyses, mechanisms for controlling flows, and, to some extent, political considerations. Political considerations are possible due to the nature of the groups either supporting or seeking favors from the Brokers. Brokers prefer strategies that play activist agencies against each other to obtain control of the balance of power.

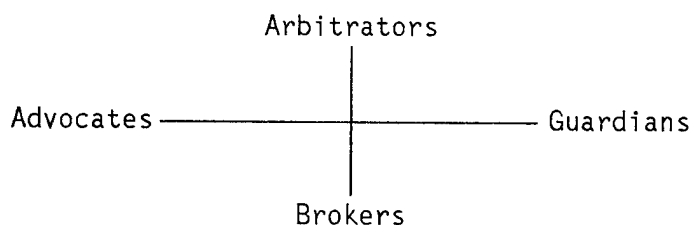
Arbitrators. Agencies that have the statutory authority to establish instream flow regimes, as well as the ability to legally allocate water. These are usually policy making agencies that rely on data collected by others and make authoritative allocations after hearing evidence from all sides. Arbitrators avoid political or public participation strategies by relying mostly on legal proceedings and management strategies.

Activist roles are:

Advocates. Agencies that call for a change in the developmental approach to water allocation. These agencies are often without enabling legislation or are reactive to the initiative held by other agencies. Such agencies rely on "crusading" and data to advance their positions.

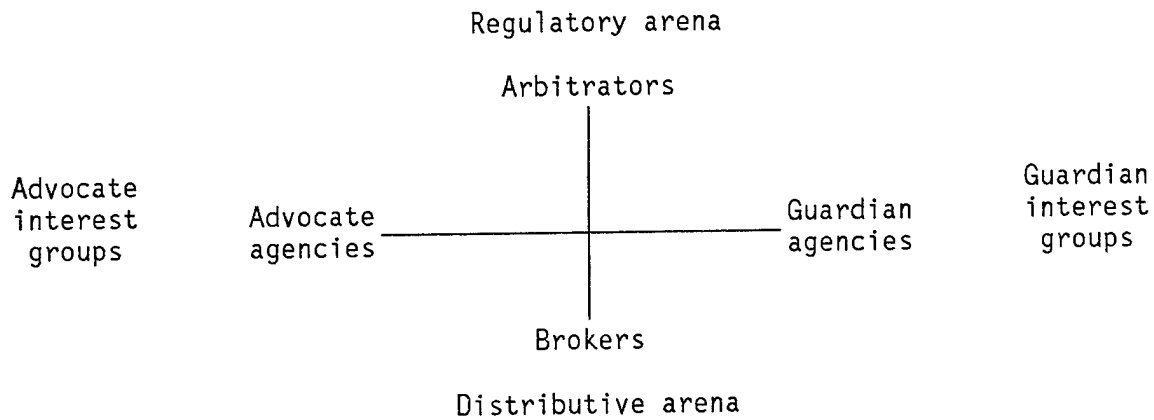
Guardians. Agencies that attempt to protect the productivity or market utility of water. These agencies prefer legal-political strategies, such as interest group consultation and public participation, because they are backed by established and influential support groups.

This concept can also be represented by a diagram:



This diagram can be expanded to show how these roles are related to interest groups and policy arenas. The key to understanding instream flow decision-making is to determine how the decision schemes operate in each quadrant of

this diagram. With this understanding, the roles and decision schemes can be combined to predict agency behavior in any situation.



Advocate agencies and interest groups prefer policymaking in the regulatory arena. Here, the advocates use their data and "crusading" efforts to counter the arguments of the guardian agencies. The guardian agencies seem to prefer operating in the distributive arena, where they can bring their political weight to bear by forming fairly stable coalitions through log rolling.

Instream use advocates enter into negotiations in the distributive arena on a case-by-case basis, but try to push toward a regulatory process. For example, the U.S. Army Corps of Engineers is a broker agency and prefers to operate in the distributive policy arena. Instream use advocates enter into the coalition building and log rolling negotiation process by stating that they will not oppose the project if a certain pattern of flow releases are incorporated in the operating manual for the project and protected for a certain reach of the river or stream. This position leaves an opening for bargaining, but, at the same time, the advocates are trying to force the decisionmaker into a regulatory posture.

REVIEW OF STRATEGY SETTING

For individuals interested in establishing a system of instream flow protection, a review of the decisionmaking scheme is useful. The goal is to predict interest group and governmental agency behavior and build a strategy that will be adopted into public policy.

The first step is to survey the advocate and guardian interest groups to determine their relative strength. This analysis has been done by Doerksen and Lamb (1979), who have categorized agencies by their relative power and set out a method for assessing this factor. An agency's behavior will change, depending on their relative power and the interest groups with which they interact.

The second step is to review agency action in terms of the proposed decision schemes: incrementalism; organizational process; and mutual adjustment. This increases an individual's ability to predict agency behavior. The Iowa example illustrates how this works. The Agencies collected, disseminated, and evaluated information according to standard operating procedures.

The third, and final, step is to identify agencies and roles. This step depends on the policy context, either regulatory or distributive, and which agency is making decisions. From this identification, it is possible to determine the perspectives of the various agencies regarding the establishment of a system of instream flow protection. Brokers perceive the need to maintain physical control over rivers and streams and will resist efforts to limit this power. Arbitrators perceive the need to maintain the ability to legally allocate water. Advocates want to change the allocation system and form strategies to pursue this goal. Finally, guardians pursue strategies to maintain the productivity and market value of the water.

The decisionmaking scheme presented here allows the interested individuals to:

- 1) Identify the forces in society that influence the creation or cooptation of government agencies;
- 2) Understand how government agencies make decisions;
- 3) Identify the policy arenas in which the various actors are operating; and
- 4) Determine which roles agencies and groups play.

This tool will assist in predicting agency and group behavior when instream flow protection strategies are initiated.

CONCLUSION

Iowa has one of the best statutory and administrative packages for protecting instream uses of water in the United States. The established minimum flow levels, administered by the Natural Resources Council, comprise a comprehensive protection system. When the established minimum flow levels are combined with the stream channelization permit program, also administered by the Council, the State has powerful institutional mechanisms for the protection of instream uses.

The flow levels established by the Department of Environmental Quality for water quality purposes are lower than the established minimum flows and represent an added system of protection. The Protected Water Areas program proposed by the Conservation Commission can be used to protect water areas of high value from undesirable changes through land use control, such as "maintenance of existing land uses with private landowners via negotiated agreements of various types" (Szcudronski 1982b).

Although these programs are impressive, they are not perfect. The problem with the established minimum flow levels is that they are set by statistical methods and not by the biological or recreational needs of particular streams. The flow levels set by the Department of Environmental Quality are also set statistically and at very low levels. The most important obstacle to stream protection is that the Commission does not have the authority to regulate land use on designated areas. This is in accord with the incremental process of decisionmaking, discussed above. However, the ICC hopes to move incrementally towards public awareness, voluntary support, and participation by private landowners. The ICC is not following an incremental approach toward gaining control of local land use decisionmaking. On the contrary, the Commission must rely on local government actions, and local landowner cooperation, to implement the program.

In spite of the imperfections in the various protection programs in Iowa, the programs do work well. The limited amount of controversy surrounding the establishment of the protection systems can probably be attributed to three factors. First, Iowa has relatively plentiful supplies of water so there has been limited conflict between water users. Second, Iowa has historically been a riparian State. The importance of this factor should not be underestimated, because it means that the concept of leaving sufficient water in the stream to meet downstream users' needs is engrained. Third, Iowa established protection systems early. This may well be the most important factor of all. While demands on the State's water supplies are increasing, the protection systems have, in the case of the established minimum flow levels, been in existence since the late 1950's. This has led to a general acceptance of the protection systems.

The Iowa experience is a good example for other "humid" States to follow because Iowa has managed to combine the protection of instream uses with establishing certainty in its consumptive water uses.

Groups and individuals that are interested in establishing a system that protects instream flows in their States should analyze the situation in their area before formulating plans. The first step in this analysis is to identify objectives. This is a very important aspect of planning because policy formulation is very difficult without a firm set of goals.

The second step in the analysis is to identify opportunities to achieve objectives. A careful review of laws containing language that labels instream uses of water as beneficial should be made. Court decisions pertaining to water rights and allocations should also be reviewed. Administrative procedures need to be looked at, particularly those of the broker and arbitrator agencies. Opportunities for legislative action and for increasing public support should be pursued.

The third step in the analysis is to identify the agencies and interest groups involved in policy formulation. It is important to identify all of the agencies and groups, supporters and adversaries alike, that would be affected by an instream flow protection system. Agencies and groups that are not identified in this step of the analysis may attempt to interject their positions into the policy formulation process at a later date, altering the strategy that has been chosen to protect flows. It is also necessary to identify the relative strengths of the participating parties, so that too much time and effort is not spent trying to meet the needs of a weaker party while the needs of a stronger party are ignored. Failure to do this could lead to a disruption of the protection process.

The fourth step is to discover the roles and needs of the various agencies and groups involved in the protection process. Through the use of the decision-making scheme discussed earlier, it is possible to determine the perceived needs and behavior patterns of the various parties involved and the degree to which a system protecting instream flows would affect those needs. The identification of the needs of the parties is important in that failure to properly identify a party's needs can lead to that party refusing to negotiate or compromise on a crucial point in the instream protection strategy, which may destroy the strategy and often extends the time necessary to establish a protection system.

The fifth and final step in the analysis is the formulation of a strategy or set of strategies. The strategy, or strategies, should be a product of what has been learned in the first four steps of the analysis. While the Iowa experience is useful in illustrating how various strategies were received in that State, strategies in other States should reflect local conditions. It is possible that an effective strategy in other States would be to have instream uses of water declared a beneficial use. Where this legal distinction is already in place, other strategies may be more appropriate.

Through the use of the scoping process and a review of the instream flow practices and strategies used in other States, groups and individuals

interested in establishing a system that will protect instream flows in their State will have a better opportunity to achieve their goals.

REFERENCES

- Aiken, J. D. 1983. Opportunities to protect instream flows in Minnesota and Iowa. U.S.D.I. Fish Wildl. Serv. FWS/OBS-83/07.
- Allison, G. T. 1971. Essence of decision: explaining the Cuban missile crisis. Boston: Little, Brown and Company.
- Baldwin, R. A. 1970. A model of optimum water allocation under Iowa's permit system. Ames, IA: Iowa State University.
- Barnhart, C. L. 1963. The American college dictionary. New York: Random House.
- Beckett, P. L., and B. L. Lamb. 1976. Establishing instream flows: analysis of the policymaking process in the Pacific Northwest. Pullman, WA: Washington State Water Research Center.
- Caulfield, H. P., Jr. 1959. The living past in Federal power policy. Annual Report. Resources for the Future:24-33.
- _____. 1974. Colorado River basin -- policy goals and values in historical perspective. Symposium sponsored by the committee on arid lands, American Association for Advancement of Science. Annual meeting; San Francisco, CA. 28 February.
- Dallegger, L. 1982. Iowa Issaak Walton League member. Telephone interview; 24 June.
- Doerksen, H. R., and B. L. Lamb. 1979. Managing the rippling stream: a model of decisionmaking in natural resource administration. Water Resources Bulletin 15:1707-1715.
- Dougal, M. D., and T. A. Austin. 1980. Five-year water resources research plan 1982-1987. Ames, IA: Iowa State Water Resources Research Institute.
- Dye, T. R. 1975. Understanding public policy. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Gieseke, L. F. 1978. Instream flow preservation in Iowa. Symposium proceedings. Instream flow management - State-of-the-art. Upper Mississippi River Basin Commission. Bloomington, MN. 14 November.

- Gors, M. A. 1971. The law of water distribution in Iowa and South Dakota: a comparison of the riparian and appropriative systems. Des Moines, IA: Drake Law Review:256-287.
- Hines, N. W. 1967. A decade of experience under the Iowa water permit system: part one. Natural Resources Journal 7(4):499-554.
- _____. 1968. A decade of experience under the Iowa water permit system: part two. Natural Resources Journal 8(1):23-71.
- Iowa Conservation Commission. 1981. Iowa protected water areas - general plan. Des Moines, IA: Iowa Conservation Commission.
- Iowa Natural Resources Council. 1981. Decision 80: water. Des Moines, IA: Iowa Natural Resources Council.
- Lamb, B. L. 1980. Agency behavior in the management of Section 208. Lamb, B. L., ed. Water quality administration: a focus on Section 208. Ann Arbor, MI: Ann Arbor Science Publishers, Inc.:209-218.
- Lindblom, C. E. 1977. Politics and markets: the world's political-economic systems. New York: Basic Books, Inc.
- Lowi, T. J. 1964. American business public policy, case studies, and technocracy. World Politics 16:677-715.
- Moorsman, R. 1982. Iowa National Wildlife Federation member. Telephone interview; 24 June.
- Morrow, W. L. 1975. Public administration: politics and the political system. New York: Random House.
- O'Connell, J. 1962. Iowa's new water statute - the constitutionality of regulating existing uses of water. Iowa Law Review 47(3):549-636.
- Olive, S. W. 1981a. Protecting instream flows in California: an administrative case study. U.S.D.I. Fish Wildl. Serv. Instream Flow Information Paper No. 14. FWS/OBS-82/34.
- _____. 1981b. Protecting instream flows in Idaho: an administrative case study. U.S.D.I. Fish Wildl. Serv. Instream Flow Information Paper No. 15. FWS/OBS-82/35.
- Sage, L. Q. 1974. A history of Iowa. Ames, IA: The Iowa State University Press.
- Sharkansky, I. 1975. Public administration: policymaking in government agencies. Chicago: Rand McNally.
- Sweetman, D. A. 1980. Protecting instream flows in Montana: Yellowstone River reservation case study. U.S.D.I. Fish Wildl. Serv. Information Paper No. 10. FWS/OBS-79/36.

Szcodronski, K. 1982a. Iowa Conservation Commission staff member. Telephone interview; 25 June.

_____. 1982b. Letter from Iowa Conservation Commission staff member, Des Moines, IA., to S. W. Olive. 8 October.

Turkle, R. 1982a. Iowa Department of Environmental Quality staff member. Telephone interview; 24 June.

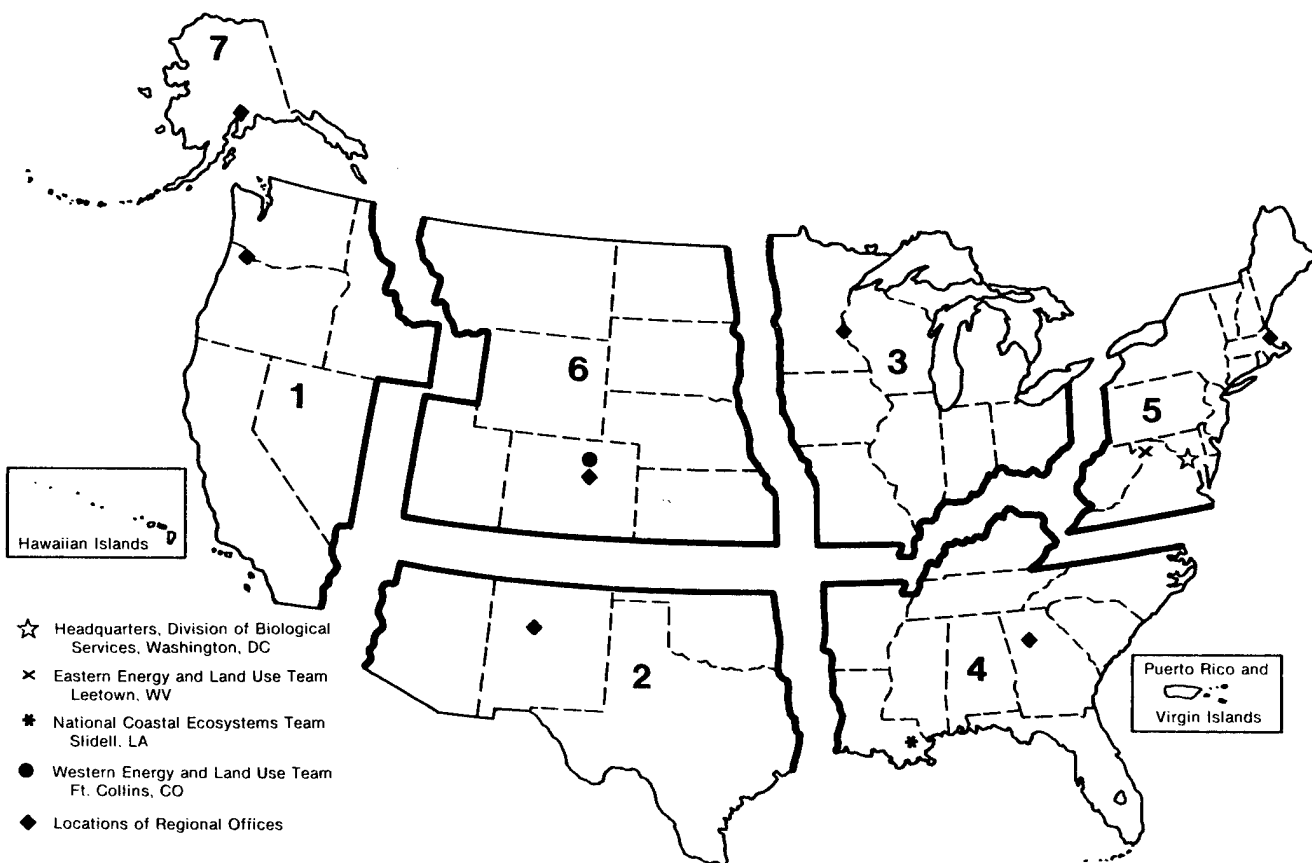
_____. 1982b. Letter from Iowa Department of Environmental Quality staff member, Des Moines, IA., to S. W. Olive. 6 October.

Wiegand, J. 1982a. Iowa Natural Resources Council staff member. Telephone interview; 24 and 25 June.

_____. 1982b. Letter from Iowa Natural Resources Council staff member, Des Moines, IA., to S. W. Olive. 12 October.

Wildavsky, A. 1975. Budgeting: a comparative theory of budgetary processes. Boston: Little, Brown and Company.

REPORT DOCUMENTATION PAGE		1. REPORT NO. FWS/OBS-83/18	2.	3. Recipient's Accession No.
4. Title and Subtitle Protecting Instream Flows In Iowa: An Administrative Case Study		5. Report Date August 1983		
7. Author(s) Stewart W. Olive		8. Performing Organization Rept. No. IFIP 20		
9. Performing Organization Name and Address Cooperative Instream Flow Service Group Western Energy and Land Use Team U.S. Fish and Wildlife Service Drake Creekside Building One 2627 Redwing Road Fort Collins, CO 80526		10. Project/Task/Work Unit No.		
		11. Contract(C) or Grant(G) No. (C) (G)		
12. Sponsoring Organization Name and Address Western Energy and Land Use Team Division of Biological Services Research and Development Fish and Wildlife Service U.S. Department of the Interior Washington, DC 20240		13. Type of Report & Period Covered		
15. Supplementary Notes		14.		
16. Abstract (Limit: 200 words) This publication is one of a series of similar documents for western and midwestern States that provides a basis survey of State prerogatives and programs that may be used to protect the instream uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including hydroelectric power production, recreation, navigation, downstream delivery, and waste load assimilation. These documents illustrate methods to protect instream uses within the context of existing rules and regulations.				
17. Document Analysis a. Descriptors Water conservation, water flow, water law, water resources, water rights, watersheds, water supply, habitability, hydroelectric power generation. b. Identifiers/Open-Ended Terms Iowa Instream flows c. COSATI Field/Group				
18. Availability Statement Unlimited		19. Security Class (This Report) UNCLASSIFIED		21. No. of Pages 35
		20. Security Class (This Page) UNCLASSIFIED		22. Price



REGION 1

Regional Director
U.S. Fish and Wildlife Service
Lloyd Five Hundred Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232

REGION 2

Regional Director
U.S. Fish and Wildlife Service
P.O. Box 1306
Albuquerque, New Mexico 87103

REGION 3

Regional Director
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

REGION 4

Regional Director
U.S. Fish and Wildlife Service
Richard B. Russell Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

REGION 5

Regional Director
U.S. Fish and Wildlife Service
One Gateway Center
Newton Corner, Massachusetts 02158

REGION 6

Regional Director
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

REGION 7

Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503



DEPARTMENT OF THE INTERIOR

U.S. FISH AND WILDLIFE SERVICE



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.